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HIGHHOLE COURTSHIP AGAIN.

TO THE EDITOR OF SCIENCE: On one of the last days of April I noticed a pair of highholes on the turf about forty feet away. One would drill the turf vigorously a few times, and then nod the beak repeatedly with a sidewise motion to the other—presumably the female, and this one took no part in the turf-drilling. While nothing passed from beak to beak, yet the antic play rather confirmed my somewhat jesting suggestion (SCIENCE, N. S., 1897, 921) that it is a feeding pantomime, the female, like a young bird, being receptive of the feeding attentions of the mate. A thorough study of this interesting bird through a telescope or powerful glass ought to reward the observer.

HIRAM M. STANLEY.

LAKE FOREST, ILL.,
May 7, 1900.

A CORRECTION.

In a note printed on page 753 of SCIENCE (May 11th), I inadvertently appear to advocate the view that the current year belongs to the twentieth century, which is not my opinion. The sentence in question should have read "It seems to me that that is reason enough why we should use '00 always to mean 1800, not 1900, even though the current year belongs to the nineteenth century."

E. L. MARK.

THE GRAPHOPHONE AS AN AUXILIARY ASTRONOMICAL INSTRUMENT. A SUGGESTION.

IN order to insure as comprehensive and authentic a graphic record of the appearance of the solar corona, as deliberate and close observation and scrutiny limited to the few minutes of totality can well be expected to furnish, I beg leave to suggest the employment of an ordinary graphophone for taking down the observer's talk instead of a short-hand recorder.

The graphophone if properly set agoing and manipulated will easily record all the observer might choose to say for about three or four minutes, and therefore would enable him to give his undivided attention to the examination and thorough study of the aspect of the phenomenon, without even the risk of being disturbed or interrupted at the critical moments by questions,

etc. Nothing, it would seem, could possibly defeat securing by this means a complete and authentic record of all an observer might feel prompted to utter or note, except, perhaps in the case the splendor of the corona should render him temporarily speechless. For verification, if deemed necessary, employ a second graphophone. The time of occurrence of any unexpected event can be noted and recorded upon the rotating barrel in several ways.

A trustworthy and comprehensive graphic account of the physical aspect of the corona and chromosphere, would be valuable I should think, in so far as it would supplement the colorless work of the camera.

W. E.

NOTES ON PHYSICS.

THE BLUE HILL KITE OBSERVATIONS.

MR. H. H. CLAYTON, in an interesting letter to *Nature*, April 26th, points out the bearing of recent observations of temperature and wind velocities at high altitudes upon the theories of cyclonic movements of the atmosphere. Four types of instability of the atmosphere are now recognized: (1) Instability due to heating of the lower strata of the atmosphere (vertical temperature gradient). (2) Instability due to the thrusting of large masses of warm air into cool regions or of large masses of cold air into warm regions, for example, a long continued southerly wind carries a mass of warm air northward into a region in which the surrounding air is cool (horizontal temperature gradient). (3) Instability due to accumulation of water vapor in the lower strata of the air. Such air precipitates its moisture more and more as it rises, is warmed by this precipitation and rushes upwards with increasing violence. (4) Instability of air streams which have passed beyond the region in which they are more or less of the nature of permanent states of motion. Thus the trade and antitrade winds in certain regions show the characteristics of what are called in hydrodynamics *permanent states of motion* and when they pass beyond these regions they become dynamically unstable and break up.

Each of these various types of atmospheric instability has been put forth as the principal cause of cyclonic motion by different writers